ABSTRACT

The position of the recombination zone can be controlled by controlling the mobility of the charge carriers. In an embodiment of the invention, the mobility of the charge carriers within the emissive polymer layer is controlled by the addition of traps – either electron traps, hole traps, or electron/hole traps. The electron traps reduce electron mobility, the hole traps reduce hole mobility, and the electron/hole traps reduce both electron mobility and hole mobility. The electron mobility and/or the hole mobility can be altered using the traps so that the recombination zone is positioned in the emissive polymer layer sufficiently far from the cathode so that quenching is minimized, and sufficiently far from the HTL/emissive polymer layer interface so that lifetime and/or efficiency is improved.